College of Science and Technology
Department of Physics
Course Syllabus

PHYS 112: Fundamentals of Physics II Lab

I. Course Description

This is a laboratory course designed to accompany PHYS 110(Non – Calculus base). This course includes laboratory experiments in wave phenomenon, optics, electricity and magnetism. The class meets one two-hour period per week. Corequisite: PHYS 110.

II. Rationale

This course gives the student laboratory experience with such phenomena as optics and electricity and magnetism.

III. Competencies

- *Personal and Professional Responsibility*. Students will demonstrate personal and professional proficiencies in pursuit of academic excellence in all courses pursued.
- *Subject Matter and Presentation Skills.* Performance in courses as evidenced by final grades will document success levels in the mastery of subject matter, written and oral communication skills.
- *Planning and Organization*. Students will demonstrate ability to plan and organize personal and professional skills. Students will also demonstrate an ability to generalize techniques to structure activities that will impact teaching and learning.

IV. Behavioral Objectives

At the end of this course, the student will be able to:

- Understand the physical environment and its relationship to man.
- Gain knowledge and understanding of scientific laws, principles, and theories.
- Develop the ability to think critically and independently, and to reason effectively.
- Be proficient in oral articulation and written expression.
- Be adept in general and scientific terminology.

V. Course Content

- Standing Waves in a String
- Resonance Frequencies in a Tube
- Geometric Optics: Reflection and Refraction
- Diffraction Grating
- Focal Lengths of Lenses and Mirrors
- Dispersion of Light by a Prism
- The Oscilloscope
- Series and Parallel Circuits
- RLC Circuits
- The Transistor Amplifier
- Digital Logic Circuits
- Integrated Circuits
- Radiation from a Gamma Source
- The Geiger Tube

VI. Learning Activities

Laboratory measurements
Data recording
Data analysis
Report of measurements and analysis in a written laboratory report

VII. Special Course Requirements

The *Laboratory Manual* is provided by the Department of Physics through the instructor when the student presents a receipt for the payment of $4.00 to Account No. 7–7278.

In addition to the laboratory manual, the student will require the following materials:

1. Loose leaf paper for writing laboratory reports
2. Metric ruler
3. Protractor
4. Compass
5. Scientific handheld calculator
6. Good quality graph paper

VIII. Evaluation Procedures

The grade in this course will be based solely upon the number and quality of laboratory reports that are submitted to the instructor. The laboratory report is to have the following parts:

1. Student's Name
2. Exercise Number
3. Title of the Exercise
4. Purpose or Objective
5. Theory
6. Procedure and Materials
7. Data and Results
8. Conclusions

Grading scale:	A	=	90 or more points
	B	=	80 – 89 points
	C	=	70 – 79 points
	D	=	60 – 69 points
	F	=	59 or below

IX. References

Textbook:

Wilson, J. D., *College Physics, 3rd Ed.*, Saunders College Publishing, Fort Worth, 1996.

Recommended Journals

The Physics Teacher
Physics Today
Computing in Science & Engineering
Journal of Undergraduate Research
Journal of College Science Teaching